Biological Evaluation and Assessment
for
Forest Service Sensitive and
Federally Listed
Plant Species

Livestock Grazing Management Project
Soda Creek/North Butte Allotment

Almanor Ranger District
Lassen National Forest

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I. Introduction

This Biological Evaluation/Biological Assessment (BE/BA) conforms with legal requirements set forth under Section 7 of the Endangered Species Act of 1973 as amended, and follows standards established in Forest Service Manual and Handbook direction (FSM 2670.3, 2671.2, and 2672.42, and R-5 FSH 2609.25) for Threatened, Endangered, and Sensitive species. The purpose of this BE/BA is to review the potential effects of the proposed Livestock Grazing Management Project–Soda Creek/North Butte Allotment (SC/NBA) on Federally listed Threatened or Endangered and Forest Service Sensitive (TES) plant species. Specifically, the purpose is to determine whether the proposed action will result in a trend toward any Sensitive plant species becoming Federally listed, to document anticipated effects of the project on Federally listed Threatened and Endangered plants, and to determine whether consultation with US Fish and Wildlife Service is required for this project. Appendix A contains the complete list of plant species considered, determinations, and rationales. The BE/BA addresses concerns with renewal of the existing usage of the allotment, which is for trailing through Forest Service lands and distribution to private rangelands, including the associated livestock grazing, except where noted otherwise below. Any future changes to these livestock usage patterns will require a new environmental review and analysis.

The SC/NBA project would authorize cattle grazing in a manner that moves toward Forest Plan goals, objectives and desired conditions as described in the Lassen NF Land and Resource Management Plan, Record of Decision (ROD) (1993), and as modified by the ROD for the Sierra Nevada Forest Plan Amendment (SNFPA) (2004).

The SC/NBA project area encompasses 28,837 acres of Plumas and Butte Counties southwest of Chester, California. About 95% of the acreage (27,267 acres) is National Forest System (NFS) land. The Forest Service proposes to authorize continued livestock grazing within the project area congruent with existing management in order to maintain current progress toward attainment of desired resource conditions. This BE/BA documents potential effects of continued grazing in the allotment on *Botrychium ascendens* (upswept moonwort), *B. minganense* (Mingan moonwort), *B. montanum* (mountain moonwort), *Meesia triquetra* (three-ranked hump-moss), *M. uliginosa* (broad-nerved hump-moss), and *Silene occidentalis* ssp. *longistipitata* (long-stiped western campion), Lassen National Forest Sensitive plant species known or expected to occur within the SC/NBA. No other currently listed Sensitive species are known or expected from the project area (Appendix A).

II. Consultation

The Internet site of the Sacramento Field Office, US Department of the Interior, Fish and Wildlife Service (USFWS) was reviewed on August 18, 2009 for an updated list of proposed and listed Endangered and Threatened species that may be present on the Lassen National Forest. *Orcuttia tenuis* and *Tuctoria greenei* are the only listed species whose range includes the Lassen National Forest (USFWS 2009). Butte County meadowfoam (*Limnanthes floccosa* ssp. *californica*) is also listed as potentially being on the Lassen National Forest in Butte County (USFWS 2009), although it has not been found on the forest and does not have designated critical habitat on the forest (USFWS 2003). *Orcuttia tenuis* and *Tuctoria greenei* have

approximately 25,000 acres of designated critical habitat on or adjacent to the Lassen National Forest (USFWS 2003); these species are not known from the SC/NBA area, and potential habitat for these species does not occur in the area. Therefore, a Biological Assessment is not needed and the US Fish and Wildlife Service was not consulted.

III. Current Management Direction

A. LRMP Direction

Current management direction for the SC/NBA project area is provided in the Butt Creek (#37), Jonesville (#44), and Soda Ridge (#45) Management Areas of the Lassen NF Land and Resource Management Plan (LRMP) (1993), as amended. Lassen NF LRMP, as amended, management direction for Sensitive Plants includes the following goals, standards, and guides (LRMP pp 4-26 and 4-27):

1. Maintain habitat and viable populations to contribute to eventual delisting of Sensitive plants that are found on the Forest.

(a) Identify, preserve, or enhance Sensitive plant populations.

(b) Restrict vegetative or soil disturbance in areas occupied by Sensitive plants, unless manipulation is need to perpetuate the species.

(c) Within the planning period, develop Species Management Guides for Sensitive plants that identify population goals and compatible management activities.

2. Manage Sensitive plants to insure that species do not become Threatened or Endangered because of Forest Service actions.

(a) Evaluate all proposed projects for potential Sensitive plant habitat. Conduct surveys at the correct time of year for species identification if potential habitat exists in a project area.

(b) If Sensitive plants are found in a proposed project, modify the project or take mitigative action as necessary to protect the habitat.

B. SNFPA Direction

Conduct field surveys for TEPS plant species early enough in the project planning process that the project can be designed to conserve or enhance TEPS plants and their habitat. Conduct surveys according to procedures outlined in the Forest Service Handbook. If additional field surveys are to be conducted as part of project implementation, surveys results must be documented in the project file.

a. Riparian Conservation Objectives (RCOs): For the entire allotment, RCOs are described in SNFPA 2004, ROD-33, and encompass many of the same elements for management of RHCAs. Grazing standards and guides are primarily associated with RCOs #2 and #5:

RCO 2 - Maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lakes, meadows, bogs, fens, wetlands, vernal pools, springs; (2) streams, including in stream flows; and (3) hydrologic connectivity both within and between watersheds to provide for the habitat needs of aquatic-dependant species.

RCO 5 - Preserve, restore, or enhance special aquatic features, such as meadows, lakes, ponds, fens, and wetlands, to provide the ecological conditions and processes needed to recover or enhance the viability of species that rely on these areas.

- **#117-** Assess the hydrologic function of meadow habitats and other special aquatic features during range management analysis. Ensure that the characteristics of special aquatic features are, at a minimum, at Proper Functioning Condition (PFC), as defined in the appropriate Technical Reports: (1) "Process for addressing PFC" TR 1737-9 (1993), "PFC for Lotic Areas" USDI TR 1737-15 (1998) or (2) "PFC for Lentic riparian-wetland Areas" USDI TR 1737-11 (1994).
- **#118**- Prohibit or mitigate ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining bog and fen ecosystems and plant species that depend on these ecosystems. During project analysis, survey, map, and develop measures to protect bogs and fens from such activities as trampling by livestock, pack stock, humans, and wheeled vehicles. Criteria for defining bogs and fens include, but are not limited to, presence of (1) sphagnum moss (*Sphagnum* spp.), (2) mosses belonging to the genus *Meesia*, and (3) sundew (*Drosera* spp.). Complete initial plant inventories of bogs and fens within active grazing allotments prior to reissuing permits.
- **#119**- Locate new facilities for gathering livestock and pack stock outside of meadows and riparian conservation areas. During project-level planning evaluate and consider relocating existing livestock facilities outside of meadows and riparian areas. Prior to re-issuing grazing permits, assess the compatibility of livestock management facilities located in riparian conservation areas with riparian conservation objectives.

C. Conservation Strategies and Assessments

A conservation strategy/assessment has been completed for *Silene occidentalis* ssp. *longistipitata* (USDA FS 2007). Draft conservation assessments exist for *Botrychium* spp. (USDA FS 2009a) and *Meesia triquetra* and *M. uliginosa* (Final) (USDA FS 2005a). No specific population goals or habitat capability models have been developed for any of these species.

Silene occidentalis var. *longistipitata* Conservation Assessment and Strategy Management Prescriptions:

- Protect all occurrences from disturbance activities (livestock grazing, logging, fuels activities, and dispersed camping and OHV use) except where prescribed for *Silene* habitat enhancement, or where unavoidable due to road maintenance activities.

- Conduct directive surveys in potential habitat for additional occurrences.

Management prescriptions for Sensitive plants on the Lassen National Forest have been developed and were signed by the Forest Supervisor, February 8, 2001 (USDA Forest Service 2001). These prescriptions provide management recommendations that line officers should consider in all land management decisions until botanical investigations and conservation strategies are completed for each species. These management prescriptions will eventually be incorporated into an LRMP amendment.

Botrychium minganense – Mingan moonwort
Meesia uliginosa – broad nerved hump-moss

There are currently no management prescriptions for *Botrychium minganense* or *Meesia uliginosa* since these species were recently added to the Region 5 Sensitive plant list and as a result, Management Prescription have not been yet been developed.

Botrychium ascendens – upswept moonwort
Botrychium montanum – western goblin

Protect all occurrences from major disturbance; allow no machinery in occupied habitat. Maintain hydrologic conditions in riparian areas where these plants occur. If riparian area has significant encroaching conifers and/or excessive fuels leading to a decline in riparian conditions, consider thinning smallest diameter trees and fuel removal done by hand only.

Meesia triquetra – three-ranked hump-moss

Protect all occurrences from ground disturbance. Maintain wet meadow/fen hydrologic conditions.

IV. Proposed Project

A. Project Area

The SC/NBA project area encompasses 28,837 acres of Plumas and Butte Counties southwest of Chester, California. About 95% of the acreage (27,267 acres) is National Forest System (NFS) land.

B. Alternative 1: The Proposed Action

The Forest Service proposes to continue authorized grazing in the SC/NBA under an adaptive management system in order to progress toward meeting desired conditions as described in the Lassen National Forest Land and Resource Management Plan, Record of Decision (1993), and as modified through the Sierra Nevada Forest Plan Amendment, Record of Decision (2004). This strategy, including Integrated Design Features for botany and other resources, would be outlined in a revised Allotment Management Plan (AMP), which would be incorporated in the current 10-year Term Grazing Permit, Part 3, Terms and Conditions. In addition to the adaptive management strategy, the AMP includes allotment-specific resource objectives, management requirements, rangeland improvement criteria, and details regarding monitoring and evaluation.

The Term Grazing Permit would be an on/off variable grazing permit whereby numbers, type of livestock (cow-calf, yearlings, dry cows), and dates and times may be adjusted when authorized by a Forest Officer within a permitted limit. Yearlong rest can be scheduled without being considered personal nonuse. Total authorized use for the "on" portion would be 27 cow-calf pairs (50%) or 109 Animal Unit Months (AUMs), with a season of use varying between June 1 and September 15. Use for the "off" portion would be the same. The capable NFS primary range acreage, when adjusted for other-than-suitable acres, is estimated to be 1,555 acres under the proposed action. An already-planned cedar-rail exclosure to protect *Botrychium* habitat along North Fork Willow Creek is due for installation in 2009-2010, and additional fencing is planned at Milkhouse Flat, Horseshoe Fen, and L-T Creek.

For additional information on proposed livestock management in the project area, consult the SC/NBA Environmental Assessment and Allotment Management Plan, both hereby incorporated by reference.

C. Alternative 2: No Action (No Grazing)

Under the No Action alternative, livestock grazing would be discontinued within the SC/NBA. Structures related to grazing, such as water troughs and fences, would be removed if and when feasible. This alternative, if selected, would include a Forest Plan amendment to close the allotment and remove it from the grazing program. Other ongoing management activities in the project area would continue.

D. Alternative 3: Current/Historic Management (2001 permit)

Under this alternative, authorized livestock grazing will continue in the SC/NBA as described in the 2001 term permit. Grazing will be authorized with 27 cow-calf pairs on NFS lands and 27 cow-calf pairs off, for a total of 54 pairs within a season of use generally fixed from June 16 to September 15 (with some variability depending on range readiness). Actual use must stay within 90 percent of permitted use unless non-use is authorized. Total authorized use would be approximately 218 AUMs. Management under this alternative would be similar to the Proposed Action except that the Integrated Design Features for botany would not be included in the permit, nor would new fencing be required at Horseshoe and LT Fens, North Fork Willow Creek, or Milkhouse Flat.

E. Integrated Design Features (IDFs) for TES, Special Interest, and Noxious Weed Species for Alternative 1

The following are the botanical protection measures for the SC/NBA project. IDFs for other resources can be found within the SC/NBA project EA, as herein incorporated by reference.

1) Threatened, Endangered, and Sensitive (TES) and Special Interest Plant Species

a) Known occurrences of *Botrychium* spp., *Meesia triquetra*, *Meesia uliginosa*, and *Silene occidentalis* ssp. *longistipitata* will be monitored for impacts by livestock. Any new TES or Special Interest occurrences discovered after project implementation will be monitored for impacts from livestock. Sites having fens, TES plants, or Special Interest species are to be managed as critical areas

emphasizing livestock management which restricts cattle grazing or ground disturbance. If monitoring indicates impacts to known or new TES or Special Interest occurrences from livestock activities, then adjustments, including potential fencing, will be made to alleviate the impacts.

b) Salt blocks and staging or gathering areas will be placed outside of known TES and Special Interest occurrences.

2) Noxious Weeds

a) Known noxious weed infestations will be identified and mapped for the allotment. Identified noxious weed sites within or adjacent to the allotment containing isolated patches with small plant numbers will be evaluated and treated according to the species present and project constraints.

b) Salt blocks and staging or gathering areas will be placed outside of known weed sites.

c) Only certified weed-free hay, straw and/or mulch, and feed pellets, rolled grains, or certified weed-free cubes are authorized to be used on the Forest, as per current national policy (FSM 2080.03(3)). Under the same policy, seed mixes used for revegetation of disturbed sites will consist of locally adapted native plant materials to the extent practicable.

d) If monitoring indicates a need for change in management strategies to eradicate noxious weeds, the plan (AMP) will be modified.

3) Fens and other Special Aquatic Features

Botanical inventories have identified several fens within the Allotment. Surveys of these sites have been initiated to detect impacts and evaluate whether they are within Proper Functioning Condition. Existing survey data suggests that the allotment has been adequately surveyed and no further intensive survey will be required in areas of primary range. The following management strategy will be applied to continue protection of these sites:

1. Implementation Monitoring – The fens will be monitored using the PFC checklist (IDT participation) (USDA FS 2009b) every 3-5 years. Implement Standard Protection Measures (SPMs) if
   - a fen trends toward Functioning at Risk or Non-functional, or
   - in any two consecutive years it shows greater than 10 percent soil disturbance.

2. Standard Protection Measures – Those actions which prevent ongoing or future damage to fens resulting from range activities, including:
   - fencing, exclosure, or debris barrier to keep cattle from the impacted fens and associated meadow systems,
   - directing cattle away from sensitive plant sites, while permittee is riding the allotment,
   - relocation of cattle management facilities and key areas outside of fens,
   - evaluating areas for alternative water sources,
   - closure of the area(s) containing fens from the allotment, and
   - reduction of cattle numbers and/or season of use.

Additional measures may be developed to restore and/or protect impacted fens from continued damage.

V. Existing Environment

A. Vegetation and Terrain

The Soda Creek Allotment includes the upper watersheds of Yellow, Grizzly, and Soda Creeks, along with their associated tributaries. The North Butte Allotment includes the upper watershed of Butte Creek and its tributaries. The landscapes of both allotments are characterized by moderate to steep slopes at elevations between about 4600 and 7100 feet. The slopes are clothed in westside mixed conifer or red fir forest, with interspersed, sometimes extensive patches of montane chaparral and small dry to wet meadows, fens, and riparian corridors.

B. Past Surveys

The SC/NBA project area has been surveyed as part of the projects listed below in Table 1. In general, surveys were conducted following the California Native Plant Society (CNPS) Botanical Survey Guidelines (2001) and were floristic in nature. Survey transect locations are recorded in the NRIS TESP Geodatabase (USDA FS 2009c) and available upon request.

Table 1: Past Surveys Conducted in the Soda Creek/North Butte Allotment Analysis Area

Project	Survey Date
TU-1	July & August, 2002
Adams Windthrow Fuels Reduction	September, 2003
Eagle Windthrow Fuels Reduction	September, 2003
Creeks Forest Health	August & September, 2004
Young Pine Plantations	August, 2004
Willow	July, August, & September, 2005
Scotts John	August & September, 2007

C. Species Present

Currently there are nine occurrences of TES species of *Botrychium* known from the SC/NBA project area, five from the North Butte Allotment and four from the Soda Creek Allotment. *Botrychium ascendens* occurs within the North Butte Allotment near Cirby Meadow (LNF#8), where it keeps company with both *B. minganense* (LNF#17) and *B. montanum* (LNF#17). *Botrychium minganense* also occurs within the North Butte Allotment at two sites in the area of Humbug Summit, high on tributaries to Willow and Scotts John Creeks (LNF#12 and #14, respectively). Within the Soda Creek Allotment, *B. minganense* occurs at Milkhouse Flat (LNF#5) and in the wet meadow that includes Little Grizzly Fen (LNF#7); *B. montanum* occurs at Milkhouse Flat (LNF#6) and at the spring above Green Island Lake (LNF#13).

Silene occidentalis ssp. *longistipitata* occurs within the North Butte Allotment at one site along Butte Creek (LNF#4B) and in several subpopulations along the middle reach of Scotts John Creek (LNF#6).

Sixteen occurrences of TES species of *Meesia*, along with the wetland and grazing status of the sites—are known from the SC/NBA project area: one occurrence of *Meesia triquetra* along a brook about a half-mile east of Summit Lake in the North Butte Allotment (LNF#32) and 12 occurrences in the Soda Creek Allotment and three occurrences of *M. uliginosa* in the Soda Creek Allotment at Horseshoe Fen north of LT Creek (LNF#4), at a fen high on Slate Creek (LNF#5), and at a site near the head of Yellow Creek (LNF#6). The Slate and Horseshoe Fens also host *M. triquetra* (LNF#7 and #16, respectively) (Table 2). The remaining 10 occurrences of *M. triquetra* are in fens west and south of Little Grizzly Campground (LNF#1 and #8, respectively), a fen on LT Creek (LNF#18), Savanna Fen at the head of Grizzly Creek (LNF#19), Elephanthead Fen midway down Rock Creek (LNF#22), a wet meadow system on the mid-course of Sawmill Tom Creek (LNF#23) and another wet meadow at its head (Grazed Willow, LNF#25), a wet meadow between Horseshoe Fen and LT Creek (Newberry, LNF#24), the floating mat at Green Island Lake (LNF#37), and Split-Level Fen along Soda Creek about four miles below Green Island Lake (LNF#47).

Table 2: Known occurrences of *Meesia* spp. within the Soda Creek/North Battle Allotment.

Occurrence No.	Location	Wetland Category	Grazed
Meesia triquetra			
LNF #1	Little Grizzly Fen	Confirmed Fen	Yes
LNF #7	Slate Creek Fen	Confirmed Fen	Yes
LNF #8	Little Grizzly Campground Fen	Confirmed Fen	Yes
LNF #16	Horseshoe Fen	Confirmed Fen	Yes
LNF #18	L-T Creek Fen	Confirmed Fen	Yes
LNF #19	Savanna Fen	Confirmed Fen	Yes
LNF #22	Elephanthead Fen	Confirmed Fen	Yes
LNF #23	Sawmill Tom Complex	Wet Meadow	Yes
LNF #24	Newberry	Wet Meadow	Yes
LNF #25	Grazed Willow	Wet Meadow	Yes
LNF #32	East of Summit Lake	Wet Meadow	Yes
LNF #37	Green Island Lake	Unconfirmed Fen	No
LNF #47	Split-Level	Unconfirmed Fen	No
Meesia uliginosa			
LNF #4	Horseshoe Fen	Confirmed Fen	Yes
LNF #5	Slate Fen	Confirmed Fen	Yes
LNF #6	Upper Yellow Creek	Wet Meadow	Yes

No other Sensitive vascular plant species occurrences have been found within the project's primary livestock use areas or elsewhere inside the project boundaries. Among the 11 key areas in the SC/NBA project area, four are near the occurrences listed above: Little Grizzly, LT Creek, Milkhouse Flat, and Scotts John Creek. Since 2003, grazing has been seasonally deferred on NFS lands in the Little Grizzly Valley area.

Other areas with TES occurrences include three that have been closed to grazing: Soda Creek Canyon, and the Soda Ridge and Green Island Lake Recommended Research Natural Areas.

Three weed species listed by the California Department of Food and Agriculture (CDFA) as noxious occur in or near the SC/NBA project area. Canada thistle (*Cirsium arvense*) is a CDFA B-listed species with moderate priority for treatment. Bull thistle (*Cirsium vulgare*) and yellow starthistle (*Centaurea solstitialis*) are CDFA C-listed species with low priority for treatment. Some of these noxious weed sites within the project area are actively being treated and/or are most likely eradicated. See the SC/NBA project Noxious Weed Risk Assessment for detailed project effects information on the noxious weed locations within this project.

D. Sensitive Species Accounts

Botrychium ascendens Species Information

Botrychium ascendens, upswept moonwort, is a small, primitive, perennial fernlike plant that is normally found in wet meadows or riparian habitats in coniferous forests at elevations from 5,000 to 6,000 feet (USDA FS 2005b; CNPS 2001). *Botrychium ascendens* is widely distributed in Canada, Alaska, Montana, California, Nevada, Oregon, Wyoming, Idaho, and Washington, but is considered rare in many of these states (USDA FS 2005b). The California Native Plant Society ranks this species as List 2.3, and considers it to be a species that is rare, threatened or endangered in California, but more common elsewhere, and not very threatened in California (CNPS 2007). Overall plant numbers within California are low, with only 19 confirmed occurrences of *B. ascendens* found in the state (CNDDB 2009). However, there are additional confirmed and unconfirmed occurrences on other forests, which are not reflected in the RAREFIND Database (USDA FS 2009; CNDDB 2009).

Currently, the Lassen National Forest has 10 occurrences, concentrated primarily on Willow and Jones Creeks on the Almanor Ranger District; the Hat Creek and Eagle Lake Ranger Districts each have one occurrence (USDA FS 2009c). Overall, numbers on the Lassen are low. Two of the occurrences along Willow Creek have not been relocated since their discovery in 1985, and one occurrence along Jones Creek has been extirpated. The remaining occurrence along Willow Creek has not been found during recent monitoring events, and habitat along this Creek has been degraded or eliminated due to culvert failures during past storm events.

Botrychium minganense Species Information

Botrychium minganense, Mingan moonwort, is a small, primitive, perennial fernlike plant, usually associated with riparian areas, seeps and small streams in coniferous forests ranging from 5,000 to 6,000 feet in elevation (CNPS 2001; USDA FS 2009c). *Botrychium minganense* is known to Butte, Fresno, Mono, Plumas, Tehama, and Tulare Counties in California; and scattered locations throughout Arizona, Idaho, Nevada, Oregon, Utah, and Washington (USDA FS 2005c). The California Native Plant Society ranks this species as List 2.2 and considers it to be a species that is rare, threatened or endangered in California, but more common elsewhere, and fairly threatened in California (CNPS 2007). Currently, this

species is known to California from only 33 confirmed occurrences, and one occurrence is known to each of the Inyo, Modoc, San Bernardino, and Sequoia National Forests, while the Plumas has two known occurrences; however, the majority of occurrences are located on the Lassen National Forest (USDA FS 2005c; CNDDB 2009). In addition, there are a few historical occurrences in Butte County and a report from the Sequoia National Park (USDA FS 2005c). Occurrences often consist of only a few plants, so overall plant numbers in California are low.

There are 27 known occurrences on the Lassen National Forest. Most are located within the Almanor Ranger District, but there is one occurrence on the Hat Creek Ranger District found on Upper Onion Creek near Cabin Springs, and there are five occurrences on the Eagle Lake District at Crazy Harry Gulch, the Martin Springs area, and Chaparral Hill (USDA FS 2005c). There is no formal monitoring in place for most of these occurrences since many have only been found in the last five years, so long- or short-term trends are unknown at this time.

Botrychium montanum Species Information

Botrychium montanum, western goblin, is a small, primitive, perennial fernlike plant, found in varied wet habitats from marshes/meadows to coniferous forest/montane streamside areas, at elevations ranging from 5,000 to 6,000 feet (CNPS 2001). *Botrychium montanum* occurs in scattered locations from British Columbia to Montana, California, Oregon, and Washington (CNPS 2001). It is one of the rarest *Botrychium* species in California, with only 23 occurrences recorded in the California Natural Diversity Database (2009), plus several recently discovered occurrences on the Lassen National Forest. Of those, the Eldorado, Modoc, Plumas, and Sierra National Forests each have one occurrence, and the rest are found on the Lassen. The California Native Plant Society ranks this species as List 2.1 and considers it to be a species that is rare, threatened or endangered in California, but more common elsewhere, and seriously threatened in California (CNPS 2007).

The Lassen National Forest currently has had 29 occurrences documented, but five of them have not been located since 1985 found along Jones and Willow Creeks. Most of these occurrences are located within the Almanor Ranger District, but there is one occurrence on the Hat Creek Ranger District found on Upper Onion Creek near Cabin Springs, and there are five occurrences on the Eagle Lake District at Crazy Harry Gulch, Chaparral Hill, and the Martin Springs area. There is no formal monitoring in place for this species, and trends, long- or short-term, are unknown at this time.

Meesia triquetra Species Information

Meesia triquetra, meesia moss, is a fairly large moss that is easily identified by its three-ranked leaves. Leaves are decurrent, ovate-lanceolate with sharply serrate margins and pointed apices. *Meesia triquetra* occurs in fens, seeps, and meadow openings surrounded by *Pinus contorta* at elevations from 5000 to 10,000 feet (herbarium specimens and CNPS 2001). *Meesia triquetra* is known from North America, Europe, and Asia but is most abundant in arctic regions. The California Native Plant Society considers the species List 4.2, and considers it fairly endangered in California but more or less widespread elsewhere (CNPS 2007). California populations are known from Alpine, Butte, El Dorado, Fresno,

Humboldt, Madera, Mariposa, Plumas, Sierra, Siskiyou and Tulare counties (herbarium specimens, CNPS 2001). In California this species is known from approximately 117 occurrences, primarily within the Sierra Nevada (USDA FS 2005a, USDA FS 2009c). Two historic occurrences outside the Sierra Nevada may be extirpated (USDA FS 2005a).

On the Lassen National Forest, this species is known from 48 occurrences, mostly within fens on the Almanor Ranger District but also occurring outside fens. Some historical occurrences may be extirpated, but most occurrences have been recently discovered due to increased survey efforts on the National Forests of the Sierra Nevada. Little population monitoring has occurred, so trends are not known (USDA FS 2005a).

Meesia uliginosa Species Information

Meesia uliginosa, broad-nerved hump-moss, occurs on moist logs in coniferous forest fens at elevations of 4,200 to 8,300 feet (CNPS 2001). The worldwide distribution of this species is continuously circumboreal, with disjunct occurrences in Tierra del Fuego, the Himalayas (Vitt 1992), and Antarctica (Ochyra and Lewis-Smith 1999). In North America it is widely distributed across the United States (Alaska, California, Michigan, Montana, Nevada, Washington, and Wyoming), Canada, and Greenland. The California Native Plant Society ranks this species as List 2.2, fairly endangered in California but more common elsewhere (CNPS 2007). There are 32 known occurrences that have been documented in California since 1980 with the majority in the Sierra Nevada Mountains (USDA FS 2005a; USDA 2009c). In addition, there are occurrences that have not been rediscovered since 1980. One of the historical occurrences outside of the Sierra Nevada Mountains appears to be extirpated. Occurrences are known on the Sequoia, Sierra, Shasta-Trinity, Plumas, Modoc, Klamath, and Tahoe National Forests, as well as the Lake Tahoe Basin Management Area, Kings Canyon National Park, and Sequoia National Park (USDA FS 2005d).

There are seven known occurrences of *Meesia uliginosa* on the Lassen National Forest, all located within fens on the Almanor Ranger District. No trend data are available for this species.

Silene occidentalis ssp. *longistipitata* Species Information

Silene occidentalis ssp. *longistipitata*, long-stiped western campion, is a fairly large campion with unusually long (to 1.5 inches) pink- to rose-colored petals that grows in the openings of middle elevation mixed coniferous forests (Hickman 1993). The historic range of *Silene occidentalis* ssp. *longistipitata* is from northeastern Shasta County (one site at Goose Valley) to eastern Tehama County, northern Butte County, and northwest Plumas County, but many of these occurrences have not been relocated since their discovery (USDA FS 2005e). The California Native Plant Society ranks this species as List 1B.2 and considers it a fairly endangered California endemic (CNPS 2007).

Currently, there are nine occurrences known on the Lassen National Forest, one of which may be extirpated. Six occurrences have been documented on adjacent private lands, three of which are historical and may be extirpated. Most other occurrences are small (<200 plants) (USDA FS 2005e).

VI. Environmental Effects of the Proposed Project

A. Alternative 1: The Proposed Action

There will be no direct, indirect, or cumulative effects on the occurrences of *Botrychium montanum* and *Meesia triquetra* in the Green Island Lake Research Natural Area or the occurrence of *Meesia triquetra* at Split-Level Fen in Soda Creek canyon—these areas are closed to grazing, and the plants there will not be affected in any way by the SC/NBA project. Effects on other occurrences across the SC/NBA project area are discussed in the following.

1. Direct Effects

Direct effects are those actions which can physically damage plants or the habitats in which they grow, including trampling, removal, and grazing by livestock and burial by animal waste. If individual plants are thus damaged or lost, they are unable to contribute reproductive material to the soil within the population.

The SC/NBA will have beneficial effects to some Sensitive plant occurrences, due to range improvements implemented as part of the proposed action. At one site for *Botrychium minganense* on North Fork Willow Creek, a 25-foot-by-25-foot (or larger) fence will be installed around the plants, to protect them from continued trampling by cattle. *Botrychium* plants at Milkhouse Flat are similarly to be protected by fencing. In addition, cattle traffic is generally light or nonexistent around Scotts John Creek, in the meadows around Little Grizzly Fen, and outside the Cirby Meadow inholding (where some cows stay all season)—to date, no grazing impacts to TES plants in these areas has been noted. Should monitoring reveal impacts in the future, project IDFs require that livestock activities be adjusted to alleviate the impacts, including potential fencing.

Elsewhere in the SC/NBA project area, direct effects to *Botrychium* plants may be more likely. The plants grow in places where soil is perennially moist and that are usually associated with surface water. Such wet places also attract cattle, depending on their accessibility and the availability of forage. *Botrychium* plants are somewhat protected by their size: they may be so small as to escape grazing. Though larger plants are liable to removal by grazing, there is little formal research on the effects of grazing on *Botrychium*. *Botrychium* clearly tolerate some degree of grazing, however it is unknown how much and how frequent (USDA FS 2009a). One study found that loss of leaf tissue through herbivory or other means made no difference in the likelihood of a new shoot being produced the following year (Johnson-Groh and Farrar 1996); however, the impact of repeated annual harvest of the leaves is unknown (USDA FS 2009a). It may well be that the more serious risk to *Botrychium* plants is not herbivory but trampling or soil churning, which can damage not only the evident aboveground plants but reproductive materials—sexual gametophytes, asexual gemmae, and overwintering rhizomes—in the soil within the population. The importance of these underground parts to the *Botrychium* life cycle can make it difficult to know just how big any given population is, since some of them may not produce any aboveground plants, especially in dry years. Therefore, even if visible plants are trampled, there may be undamaged plant material remaining in the ground to help the population survive. As noted above, should livestock impacts be noted at any *Botrychium* sites in the future, project IDFs provide for measures to be taken to alleviate the impacts.

Of the 16 occurrences of *Meesia triquetra* known from the SC/NBA project area and three occurrences of *Meesia uliginosa*, those at Horseshoe and LT Fens will be protected by fencing, due to range improvements required as part of the proposed action. Since these fens have had known impacts from cattle in the past (Table 3), fencing will eliminate ongoing impacts and provide a beneficial effect to these occurrences and their associated fen habitats. At other *Meesia* sites in the project area where grazing is feasible, direct effects to the plants are possible. At least as much as with *Botrychium*, *Meesia* habitat is perennially wet and green—primarily fens and wet meadows—and likely to attract cattle. The *Meesia* plants are too small for grazing but are highly vulnerable to trampling, and much depends on how frequent and intensive the cattle traffic might be. Table 3 lists the fens and wet meadows within the SC/NBA project area that support *Meesia* occurrences, as well as one fen (Yellow) where no *Meesia* has been seen. As indicated in the table, several of these wetlands have shown little or no evidence of impacts from grazing, while others have shown considerable impacts during past monitoring. There are five fens (Elephanthead, Horseshoe, LT, Slate, and Yellow) and three wet meadows (Grazed Willow, Newberry, and Sawmill Tom Complex) where conditions have at some point been described as fair or worse. It is at these sites that *Meesia* plants have been most vulnerable to direct effects from grazing.

Table 3: Fens and Wet Meadows in the Soda Creek and North Butte Allotments

Name	Quad Legal	Grazed? Condition	TES Species
Elephanthead	Humbug Valley (75) T26N-R6E-S7, NW of NW	Yes Fair to good	*Meesia triquetra*
Grazed Willow**	Jonesville (82) T26N-R5E-S10, NW of SE	Yes Poor	*Meesia triquetra*
Horseshoe	Belden (81) T26N-R6E-S20, SE of NW	Yes Poor to fair	*Meesia triquetra* and *M. uliginosa*
Little Grizzly	Humbug Valley (75) T26N-R6E-S5, SE of SW	No Good	*Meesia triquetra* and *Botrychium minganense*
Little Grizzly Campground	Humbug Valley (75) T26N-R6E-S8, NW of NE	Yes - Good (fen) , extensive old disturbance elsewhere	*Meesia triquetra*
L-T	Belden (81) T26N-R6E-S20, NW of SW	Yes Poor to fair	*Meesia triquetra*
Newberry**	Belden (81) T26N-R6E-S20, SW of NW	Yes Poor to fair	*Meesia triquetra*
Savanna	Humbug Valley (75) T26N-R6E-S5, NE of NW	Yes Good to excellent	*Meesia triquetra*
Sawmill Tom Complex**	Belden (81) T26N-R6E-S8, and S17,	No Fair to good	*Meesia triquetra*
Slate	Belden (81) T26N-R6E-S7, NW of SW	Yes (some punching)) Fair to good	*Meesia triquetra* and *M. uliginosa*
Upper Yellow Creek**	Humboldt Peak (74) T27N, R6E, S28, NW of NW	No Excellent	*Meesia uliginosa*
Yellow	Humbug Valley (75) T27N-R6E-S31, NE of SW	Yes Fair to good	

NOTE: Three suspected but unverified fens—Green Island Lake, Soda, and Split-Level—are not listed above because they're in the ungrazed Soda Creek watershed.
** Wet Meadows

Direct effects to plants of *Silene occidentalis* ssp. *longistipitata* are possible but would be no more than incidental. Plants near Scotts John Creek are all on the uphill side of the road paralleling the creek (Rd. 26N11) and are some distance from the bed of the creek. These plants have been monitored almost every year since their discovery in 1995, with no evidence that the presence of cattle has affected them. The plant that was reported near Butte Creek in 1993 would likely be in the same situation, but it has never been relocated despite recent efforts to do so.

2. Indirect Effects

Indirect effects (either positive or negative) on a plant species might involve changes in competition interactions, vegetation structure, and competition from noxious weeds. The effects of livestock-induced changes in competition and community structure on *Botrychium* would likely be only minor, since the plants have means (overwintering rhizomes and belowground reproductive parts) to wait out temporary changes in surface structure—indeed, the belowground parts of moonworts may not send up shoots at all in unfavorable years. There is evidence that subsurface factors, especially mycorrhizae, may be much more important for *Botrychium* than photosynthesis (Johnson-Groh 2003), suggesting that aboveground vegetation structure might not be as important for *Botrychium* as it is for many vascular herbs. More serious indirect effects could arise if livestock traffic were heavy enough to change the movement of water and/or the drainage of soil where *Botrychium* grows.

Intensive and/or frequent livestock traffic can also have serious consequences for the fens and similar wet meadows favored by the two species of *Meesia*. Both species are closely associated with rich fens, with deep accumulations of waterlogged peat soil, pH higher than about 5.5, and an abundance of mineral ions—indeed, water levels and nutrient characteristics are critical to the abundance and distribution of species in these systems (USDA FS 2005a). Hoof traffic, especially when concentrated in a particular spot or lane, can change the water movement and storage characteristics of a fen and, if severe enough, can ultimately dewater the fen. As water storage capacity decreases, the fen plant community, typically dominated by mosses and rhizomatous graminoids, may be invaded by short-lived, taprooted plants that don't contribute to long-term peat formation, such as *Hypericum anagalloides* and *Mimulus primuloides.* A study of Sierran fens found that fens subject to moderate or heavy grazing show areas of peat soil exposed to the atmosphere, sometimes remaining unvegetated for weeks or even years. Such removal of ground cover results in a reduction of overall plant leaf area and therefore of primary production, and the exposed peat dries and decomposes, making the fen a place where overall system respiration increases and more carbon is lost than is accumulated (Cooper 2005). Should such major changes come about in a fen or wet meadow where *Meesia* occurs, the long-term persistence of the *Meesia* may be seriously jeopardized.

In July 2009, Horseshoe, Elephanthead, and L-T Fens were assessed for Proper Functioning Condition (PFC) (USDA FS 2009b), as called for in the Adaptive Management Strategy section of the AMP (pages 15-16). These three fens were judged to be the ones in most immediate need of attention. The Adaptive Management Strategy stipulates that "fens will be monitored using the PFC checklist (Interdisciplinary Team participation) every 3-5 years" and that Standard Protection Measures, such as fencing, closure, or redirection of cattle, are required if a fen trends towards Functioning at Risk or Non-functional or if a fen shows more than 10 percent soil disturbance in any two consecutive years. Table 4 shows the conclusions of

the assessment team regarding the three fens that were examined. Horseshoe and LT Fens are to be fenced to eliminate impacts, and Elephanthead Fen, with equivocal functioning condition, is to be monitored annually to see if it too needs fencing.

Table 4: PFC Condition of Fens within the Soda Creek North Butte Allotment

Fen	PFC Condition Assessment	Comments and Protection Measures
Horseshoe Fen	Functional At Risk	Fence to eliminate impacts.
L-T Creek Fen	Proper Functioning Condition	Complex of wet meadows and fens. Used as holding pasture near end of grazing season. Fence fens to eliminate potential detrimental impacts.
Elephanthead Fen	Proper Functioning Condition/ Functional At Risk	Continue monitoring annually to determine if area needs to be fenced.

As noted above, 14 years of monitoring along Scotts John Creek have shown no evidence of livestock impacts to *Silene occidentalis* ssp. *longistipitata*. The area is only lightly grazed, and no indirect effects are anticipated.

An increase in noxious weeds or other undesirable non-native species is a potential indirect effect of grazing activities; however, the likelihood of such effects in the SC/NBA project area is low (Noxious Weed Risk Assessment, SC/NBC project). Grazing management can affect weedy species' spread by carrying seeds into new areas and by altering soil cover conditions in ways favorable to weed establishment. This has been the case in the project area for an extended period of time, and yet the area is largely free of weeds, due in part to the heavy forest and chaparral cover over most of the landscape. Canada thistle, bull thistle, and yellow starthistle are the only CDFA-listed noxious weeds reported to be present in or near the allotment, at five sites. At two of the sites, weeds are believed to have been eradicated; the other three sites have not been treated. The Butte Creek site, downstream from Butte Creek House, is bouldery and located in a small canyon unlikely ever to be visited by a cow. The two Yellow Creek sites, one each for *Cirsium arvense* and *C. vulgare*, probably do see some livestock traffic and are therefore vulnerable to weed spread, but no TES plants are known to occur in the creek's canyon. Project noxious weed Integrated Design Features, such as continued treatments of known occurrences and use of weed-free hay, substantially reduce the risk of noxious weed spread, so impacts from noxious weed invasion are not expected.

3. Cumulative Effects

A cumulative effect can result from the incremental impact of the action when added to the effects of past, present, and reasonably foreseeable future actions. Past activities are implicitly considered by reviewing existing conditions, since these reflect the residual impacts of all prior human actions and natural events that have affected the environment and might contribute to cumulative effects. By looking at current conditions now, we capture the effects of such actions and events collectively, regardless of the contributions of particular actions or events.

The project area was chosen as the cumulative effects analysis area for *Botrychium* and *Meesia* spp. and *Silene occidentalis* ssp. *longistipitata* because their historic range and specific habitat requirements are unknown, and it was assumed that if the SC/NBA project would not affect the viability of the species within the project area, it would not affect their viability outside of the project area. Past, ongoing or future vegetation treatments on private lands may have had cumulative impacts to the species under consideration here, but since survey requirements and mitigations for their occurrences are not known, the nature and extent of the impact to the species cannot be quantified.

Past Actions

Past activities known to have occurred within the project area include timber harvest and other vegetation management actions, Christmas tree permits, roads maintenance activities, and various recreation activities, such as hiking and camping, OHV use, and hunting. Past actions are implicit within existing conditions and are addressed within occurrence summaries above.

Ongoing Actions

Ongoing vegetation management projects, special uses, and recreation projects on the District have been surveyed to similar standards as the SC/NBA Project. As with the SC/NBA Project, known occurrences of Sensitive plant species for which viability was a concern have either been avoided by project activities or protected by Integrated Design Features that minimize impacts to known populations. Ongoing actions such as road maintenance and firewood gathering contribute only incidental, if any, effects to the two species of *Meesia*. The impacts of these activities are highly dispersed throughout the project area, and most would not occur within the wet, open places where *Meesia* plants occur. The same can be said of *Botrychium* occurrences, although the plants can grow in somewhat more wooded conditions than *Meesia*. *Silene occidentalis* ssp. *longistipitata* favors semishaded habitat (10-50% canopy closure) in mid-elevation mixed conifer forest or black oak woodland. These areas are not destination spots for firewood gatherers, and none of the known occurrences are adjacent to roads where maintenance activities could impact individuals.

For all these species recreation will have at most incidental effects. Recreation within the SC/NBA area is highly dispersed except along the Pacific Crest Trail and connector trails and scattered campgrounds, which do not contact any of the sites for TES plants. Other than the Pacific Crest Trail, there are no summer homes, paved roads, or other infrastructure in the SC/NBA project area to attract concentrated human traffic. Roads and recreational traffic have potential to facilitate the introduction and/or spread of weeds on the Forest and therefore to contribute cumulatively to effects on TES plant habitat on the Forest. Noxious weeds generally cause permanent habitat degradation and can compete with TES plants, making the habitat less suitable for them and other desirable species. Nonetheless, with the implementation of IDFs, weed issues in the SC/NBA project area are unlikely to intensify from their presently low level.

Foreseeable Future Actions

Foreseeable future actions include vegetation management treatments under the following projects: Creeks II Forest Restoration Project; Lotts Aspen, Oak, & Pine Enhancement Project; Rust Resistant Sugar Pine Maintenance Project; and Scotts John Forest Health Recovery Project. These and other future actions within

the project area would be adequately surveyed for TES plant species. Any species for which viability was a concern would either be avoided by project activities or mitigated by protect IDFs. The implementation of the Forest-wide Motorized Travel Management Plan will close the Forest to cross-country travel and will eliminate the use of some unauthorized routes within the project area, which will, if anything, enhance the integrity of the habitats where TES plants occur. Cumulative effects from noxious weed introduction and/or spread related to other projects are possible; however, given the low incidence of weeds across the area and the generally low vulnerability of its habitats to weed invasion, with the implementation of IDFs, weed issues in the project area are unlikely to intensify.

In sum, there are few if any effects to species of *Botrychium* or *Meesia* from any known ongoing or reasonably foreseeable future actions in the SC/NBA project area that would likely add cumulatively to project-related direct and indirect effects. On the Lassen National Forest, *Botrychium ascendens* is the rarest of three moonworts under consideration, with only 10 occurrences known; *B. minganense* has 27 occurrences and *B. montanum* 29. Most occurrences on the forest are stable, but several may have been lost during a past major storm event (USDA FS 2009d). All three species, though rare, are widely distributed across western North America.

Meesia triquetra and *M. uliginosa* both are widespread at high latitudes around the world but rare at lower latitudes like California's. The Lassen National Forest has 48 occurrences of *M. triquetra* but so far only seven known occurrences of *M. uliginosa*; however, and most known occurrences outside the project area are stable. *Silene occidentalis* ssp. *longistipitata* is endemic to northeastern California and has nine occurrences on the Lassen National Forest, one of which may have been extirpated. The Scotts John occurrence has been stable for many years, and future vegetation treatments might, if anything, may enhance habitat for *Silene occidentalis* ssp. *longistipitata* within the project area. Overall, due to Integrated Design Features and the Adaptive Management Strategy for TES plants and Fens implemented as part of the proposed action, the Soda Creek and North Battle Allotments project will not affect the viability of any Sensitive plant species within the project area. In addition, if future impacts are recorded to these species or their habitats, steps will be taken to eliminate or mitigate these impacts so that the viability of these species will be maintained within the project area and throughout their range.

B. Alternative 2: No Action (No Grazing)

1. Direct and Indirect Effects

There would be no direct effects to species of *Botrychium* or *Meesia* or to *Silene occidentalis* ssp. *longistipitata* from the No Action Alternative other than those associated with current ongoing activities. In addition to the removal of the possibility of trampling and grazing on plants by cattle, indirect effects from Alternative 2 are associated with the potential of negative vegetative succession in the absence of grazing within known Sensitive plant habitats, and with the beneficial effect of habitat recovery in those fens that have been damaged by past livestock use. As noted earlier, little formal research has been done on the effects of grazing (or its absence) on *Botrychium* populations, so no definitive statement can be made as to how *Botrychiums* in the SC/NBA project area would fare without livestock activity. At a minimum, it seems reasonable to expect that removing the possibility of trampling and soil churning by cattle would be a benefit

for the plants. *Meesia* plants would probably benefit by the removal of grazing from any fens or wet meadows, since hoof punching and the annual exposure of peat caused by livestock grazing can have a long-term negative effect on these species and their associated habitat. *Silene occidentalis* ssp. *longistipitata* individuals might suffer to some degree if there were a resurgence of vegetative competition following removal of grazing, but since grazing has not been observed within these occurrences, this is likely not an issue. As a result, the No Grazing Alternative would only provide beneficial effect to Sensitive plants species and their habitats within the Soda Creek/North Battle Allotments project area.

2. Cumulative Effects

Given that no negative direct or indirect effects are expected to species of *Botrychium* and *Meesia* or to *Silene occidentalis* ssp. *longistipitata* from the implementation of the No Action Alternative, cumulative effects are not a concern for these species with the implementation of Alternative 2.

C. Alternative 3: Historic Management Alternative

The major difference between this Alternative and the Proposed Action is that IDFs would not be included in the permit and there would be no new fencing at Horseshoe Fen, LT Fen, Milkhouse Flat, or the North Fork of Willow Creek that will provide beneficial effects to Sensitive plants and their associated habitats. Furthermore, more primary range would be considered capable and suitable (2,402 acres versus 1,532 under Alternative 1).

1. Direct and Indirect Effects

Direct and indirect effects to species of *Botrychium* and *Meesia* and to *Silene occidentalis* ssp. *longistipitata* would be similar to those described for Alternative 1 within the SC/NBA project area. Without IDFs, however, means would not be available to protect plants of these species from livestock impacts, should such impacts be observed during future monitoring or discoveries of new populations. Furthermore, without new fencing at Horseshoe Fen, LT Fen, Milkhouse Flat, and North Fork Willow Creek, there would be continued impacts to occurrences of *Botrychium* and *Meesia* spp. located within these areas, and a few occurrences, notably the *Botrychium* occurrences at Milkhouse Flat, could be extirpated.

2. Cumulative Effects

For Alternative 3, the cumulative effects of past, ongoing, and foreseeable future actions would be identical to those discussed for Alternative 1, except that, in the absence of fencing as provided for by the project's Integrated Design Features, there would likely be continued effects to plants at occurrences where livestock impacts have been a substantial concern. Overall, trampling is the most likely negative effect that could change the survival prospects of species of *Botrychium* and *Meesia* in the SC/NBA project area. Browsing and trampling of *Silene occidentalis* ssp. *longistipitata* are theoretically possible along Scotts John Creek, but cattle usage is typically light in this area and no such problems have been observed over the long period that the plants have been monitored. With continued historic livestock management under Alternative 3 it is

possible that the viability of some *Botrychium* occurrences within the project could be in jeopardy; however, the viability of all the species would be maintained on the forest and throughout their range.

VII. Determination for Alternative 1, Proposed Action:

Overall, Integrated Design Features incorporated as part of the proposed action require that TES species discovered after project implementation be monitored for impacts by livestock. If monitoring indicates impacts from livestock activities, then adjustments will be made to alleviate impacts to these occurrences. Fencing to be installed at Horseshoe and LT Fens, the North Fork of Willow Creek, and Milkhouse Flat exemplify such adjustments. These adjustments will help eliminate impacts at those sites that seem to have been most vulnerable, and future monitoring and adjustment will minimize impacts in the future. As a result, it is then my determination that the Livestock Grazing Management Project—Soda Creek/North Butte Allotment, may affect individuals or habitat of *Botrychium ascendens, B. minganense*, *B. montanum, Meesia triquetra, M. uliginosa,* or *Silene occidentalis* ssp. *longistipitata* but is not likely to result in a trend toward Federal listing as Threatened or Endangered or in a loss of viability for these species.

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Appendix A
Determinations for Federally Listed (FT/FE) and Region 5 Forest Service Sensitive (S) Plant Species in the Livestock Grazing Management Project— Soda Creek and North Butte Allotment

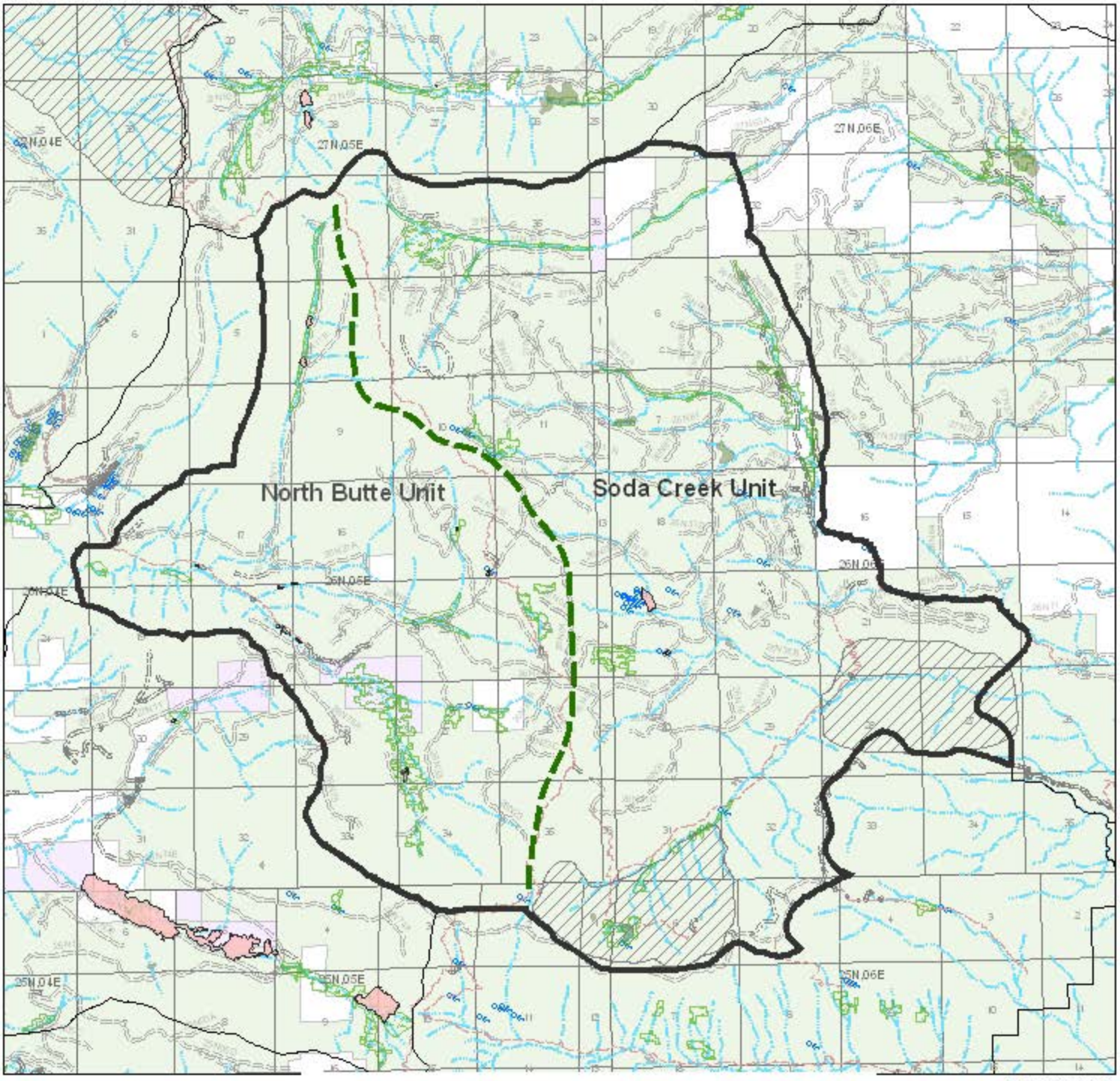
Species	Status*	Determination**	Rationale
Limnanthes floccosa ssp. *californica* Butte County meadowfoam	FE	**No Effect**	Low-elevation westside vernal pool habitat not present in project area. Below 3000 ft.
Orcuttia tenuis Slender Orcutt grass	FT	**No Effect**	Vernal pool habitat, including designated critical habitat, not present in project area. 4900-5760 ft.
Tuctoria greenei Greene's tuctoria	FE	**No Effect**	Vernal pool habitat, including designated critical habitat, not present in project area. 4900-5760 ft.
Arabis constancei Constance's rock cress	S	**No Effect**	Habitat of serpentine rock outcrops or soils not present in project area. 3500-6750 ft.
Astragalus pulsiferae var. *suksdorfii* Suksdorf's milk-vetch	S	**No Effect**	Habitat of sandy volcanic soils in sagebrush or pine forest not present in project area. 4500-6500 ft.
Botrychium ascendens **Upswept moonwort**	**S**	**May Effect**	**Species present—see Biological Evaluation.**
Botrychium crenulatum Scalloped moonwort	**S**	**No Affect**	Habitat of springs, seeps, or gentle, perennially wet stream banks in mixed conifer forest well surveyed but species not found. 5040-6000 ft.
Botrychium lunaria Moonwort grapefern	S	**No Effect**	Habitat of moist subalpine meadows, stream banks, springs or seeps not present in project area. Species not documented from Lassen NF. 7000-10,000 ft.
Botrychium minganense **Mingan moonwort**	**S**	**May Affect**	**Species present—see Biological Evaluation.**
Botrychium montanum ***Western goblin***	**S**	**May Affect**	**Species present—see Biological Evaluation.**
Botrychium pinnatum Northwestern moonwort	S	**No Effect**	Habitat of small stream banks in coniferous forests well surveyed but species not found. 5600-5860 ft.
Bruchia bolanderi Bolander's bruchia	S	**No Effect**	Potential habitat of bare soil along westside streamlets through montane meadows or fens well surveyed but species not found. Species known on Plumas National Forest but not on Lassen. 3800-8200 ft.
Buxbaumia viridis Bug-on-a-stick	S	**No Effect**	Potential habitat of highly decayed logs, peaty soil or humus in moist, shaded conditions well surveyed but species not found. Species known on Plumas and Modoc National Forests but not on Lassen.
Calochortus longebarbatus var. longebarbatus Long-haired star tulip	S	**No Effect**	Habitat of eastside, seasonally wet meadows north of Highway 299 not present in project area. 4000-6300 ft.
Calystegia atriplicifolia ssp. *buttensis* Butte County morning glory	S	**No Effect**	Habitat of low-elevation, dry openings in westside mixed conifer or pine forests south or east of Ishi Wilderness not present in project area. 2000-4000 ft.
Clarkia gracilis ssp. *albicaulis* White-stemmed clarkia	S	**No Effect**	Habitat of low-elevation, westside foothill chaparral or cismontane woodland south or east of Ishi Wilderness not present in project area. 500-3600 ft.
Clarkia mildrediae ssp. *mildrediae* Mildred's clarkia	S	**No Effect**	Habitat of sandy, often disturbed, granitic soils in lower montane mixed conifer forest not present in project area. 1500-5200 ft.

Species	Status*	Determination**	Rationale
Collomia larsenii Talus collomia	S	**No Effect**	Alpine fell-field habitat not present in project area. 7250-11500 ft.
Cryptantha crinita Silky cryptantha	S	**No Effect**	Potential habitat of foothill gray pine forest and blue oak woodlands near the Ishi Wilderness not present in project area. Below 3700 ft.
Cypripedium fasciculatum Clustered lady's-slipper	S	**No Effect**	Habitat of dry to moist, open, westside mixed conifer to pine forest south of Lake Almanor not present in project area. 2000-6000 ft.
Cypripedium montanum Mountain lady's-slipper	S	**No Effect**	Habitat of moist mixed conifer forest habitat near Burney Falls not present in project area. 2800-6000 ft.
Eriogonum prociduum Prostrate buckwheat	S	**No Effect**	Habitat of dry, rocky volcanic soils in eastside pine forest, juniper woodlands, or low sage not present in project area. 4200-8200 ft.
Eriogonum spectabile Barron's buckwheat	S	**No Effect**	Habitat of glaciated andesite soils in very open red fir/lodgepole forest not present in project area. 6600-6640 ft.
Fritillaria eastwoodiae Butte County fritillary	S	**No Effect**	Potential habitat of lower-elevation westside mixed conifer or chaparral on the Sierran west slope not present in project area. 100-4000 ft.
Helodium blandowii Blandow's bog moss	S	**No Effect**	Habitat of wet meadows, seeps or fens in westside, subalpine coniferous forest or alpine lakes well surveyed but species not found. Not known on Lassen National Forest. 6000-8100 ft.
Hydrothyria venosa Veined water lichen	S	**No Effect**	Potential habitat of cold, clear, slow moving and shallow spring-fed westside streams well-surveyed. Habitat determined not suitable for species.
Juncus leiospermus var. *leiospermus* Red Bluff dwarf rush	S	**No Effect**	Habitat of lower-elevation vernal pools or seasonally wet flats north of Highway 299 not present in project area. 175-3300 ft.
Lewisia kelloggii ssp. *hutchisonii* Hutchison's lewisia	S	**No Effect**	Habitat of relatively flat, open areas or ridge lines with bare, rocky soil at moderately high elevations not present in project area. 5100-7000 ft.
Limnanthes floccosa ssp. *bellingeriana* Bellinger's meadowfoam	S	**No Effect**	Habitat of seasonally wet areas in oak or oak/juniper woodland north of Highway 299 not present in project area. Below 3600 ft.
Lomatium roseanum Adobe parsley	S	**No Effect**	Habitat of shallow, rocky soil on open, wind-swept ridge tops on the Diamond Mountains not present in project area. 5880-7280 ft.
Lupinus dalesiae Quincy lupine	S	**No Effect**	Habitat of dry, often rocky slopes in mixed conifer forest in the southeastern part of the Almanor Ranger District not present in project area. 2500-5580 ft.
Meesia triquetra **Three-ranked hump moss**	S	**May Effect**	**Species present—see Biological Evaluation.**
Meesia uliginosa **Broad-nerved hump moss**	S	**May Effect**	**Species present—see Biological Evaluation.**
Mimulus evanescens Ephemeral monkeyflower	S	**No Effect**	Habitat of seasonal lake margins, stream banks or wet areas in eastside pine or sagebrush/juniper vegetation not present in project area. 3900-5580 ft.
Monardella follettii Follett's monardella	S	**No Effect**	Habitat of serpentine soils not present in project area. 4000-6500 ft.

Species	Status*	Determination**	Rationale
Monardella stebbinsii Stebbins' monardella	S	**No Effect**	Habitat of north-facing, talus serpentine slopes not present in project area. Plumas N.F. 2500-5000 ft.
Oreostemma elatum Plumas aster	S	**No Effect**	Habitat of westside fens or very wet meadows surveyed and species not found. 3500-6800 ft. Nearest occurrence on Mt. Hough Ranger District of Plumas NF; species not known on Lassen National Forest.
Packera eurycephala var. *lewisrosei* Lewis' cut-leaved ragweed	S	**No Effect**	Habitat of serpentine soils in chaparral and mixed conifer forest not present in project area. 4100-6240 ft.
Penstemon personatus Closed-throated beardtongue	S	**No Effect**	Habitat of north-facing slopes in upper-elevation mixed conifer or red fir forests on the southern edge of the Almanor RD not present in project area. 4000-6500 ft.
Penstemon sudans Susanville beardtongue	S	**No Effect**	Habitat of open, often rocky volcanic soils in juniper woodlands or yellow pine forests near Susanville not present in project area. 3900-5600 ft.
Phacelia inundata Playa phacelia	S	**No Effect**	Habitat of eastside subalkaline flats not present in project area. 5000-6600 ft.
Ptilidium californicum Pacific fuzzwort	S	**No Effect**	Habitat of old-growth mixed conifer stands or stands with legacy components within the northwest portion of the Hat Creek Ranger District not present in project area.
Rorippa columbiae Columbia yellow cress	S	**No Effect**	Habitat of large, open, seasonally wet eastside flats (playas) not present in project area. 4000-5950 ft.
Rupertia hallii Hall's rupertia	S	**No Effect**	Habitat of openings in lower-elevation westside mixed conifer forest in the Campbellville and Butte Meadows areas not present in project area. Below 4500 ft.
Scheuchzeria palustris var. *americana* American Scheuchzeria	S	**No Effect**	Habitat of floating sphagnum fens in cold lakes and basin fens not present in grazed portion of project area. 3000-9000 ft.
Sedum albomarginatum Feather River stonecrop	S	**No Effect**	Habitat of serpentine rock outcrops not present in project area. 1000-5600 ft.
Silene occidentalis* ssp. *longistipitata **Long-stiped campion**	**S**	**May Effect**	**Species present—see Biological Evaluation.**
Thelypodium howellii ssp. *howellii* Howell's thelypody	S	**No Effect**	Habitat of alkaline meadows, seeps and pastures or sagebrush/rabbitbrush scrub not present in project area. 4000-6000 ft.

*Status: FE = Federal Endangered; FT = Federal Threatened; S = Forest Service Sensitive
**Determinations: No Effect = Will Not Affect the Species; May Affect = May Affect Individuals or Habitat, But Not Likely to Result in a Trend toward Federal Listing or Loss of Viability for the Species.

Soda Creek/North Butte Allotment



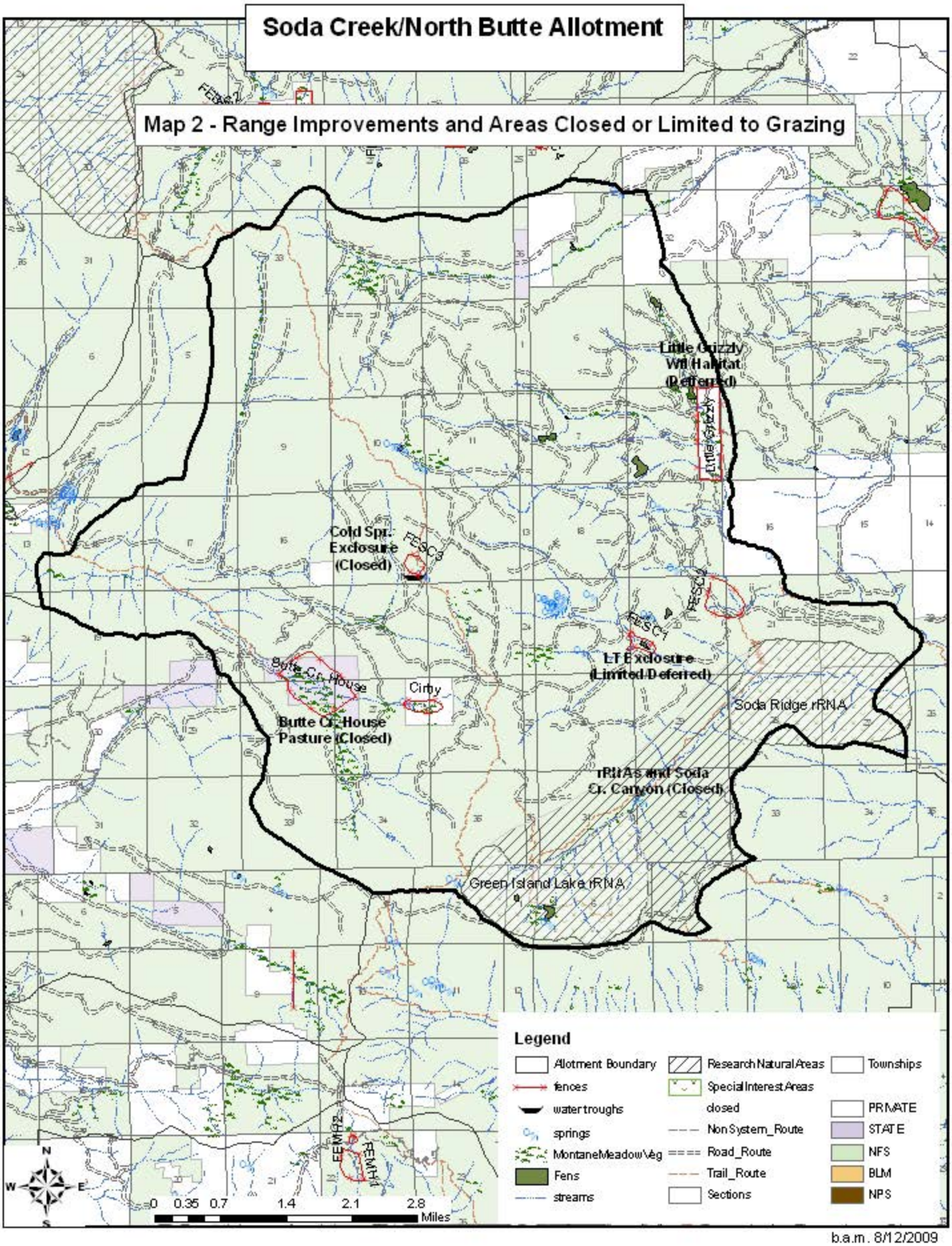
b.a.m. 3/2/2009

Legend

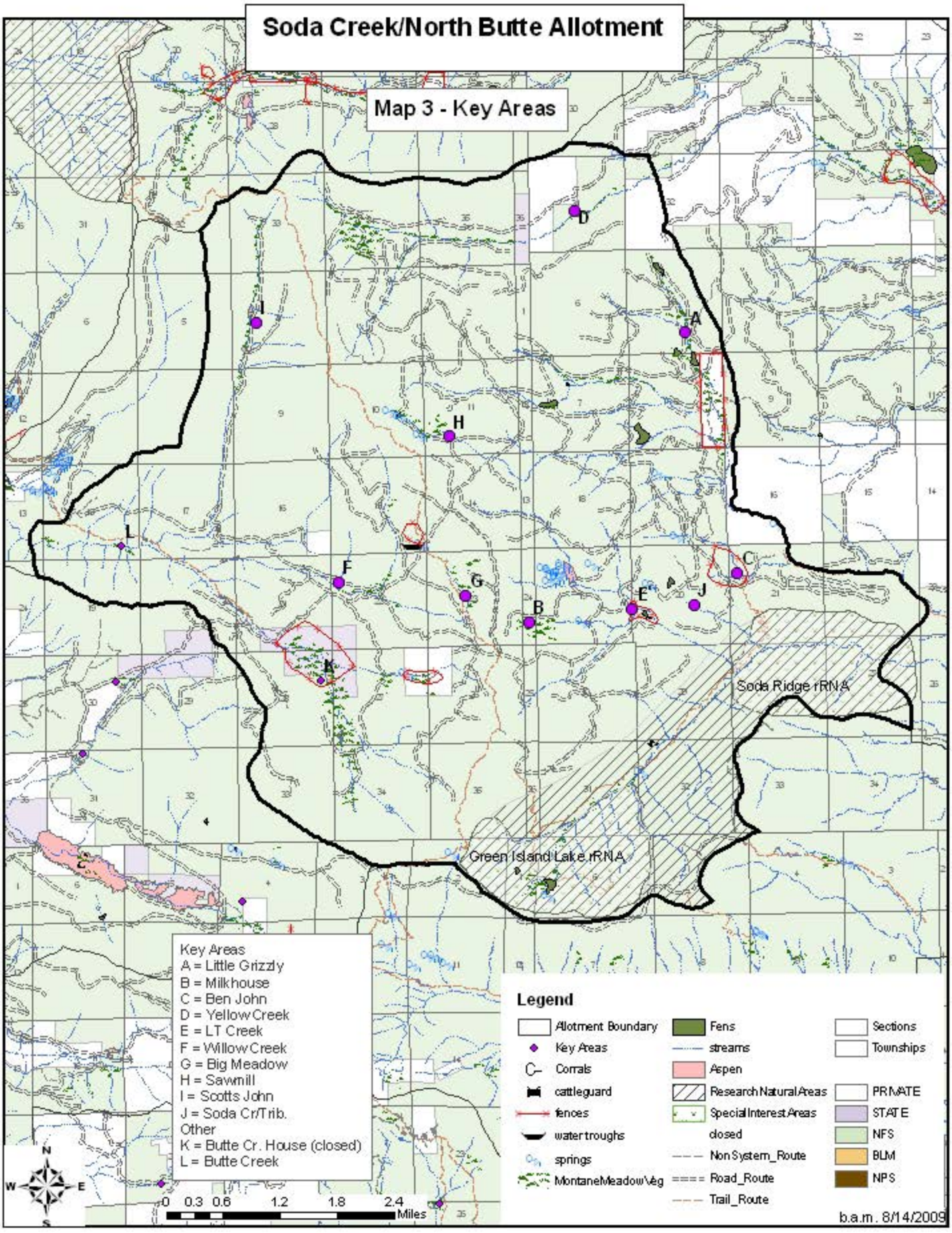
- Allotment Boundary
- Aspen
- Fens
- MontaneMeadow\Veg
- Research Natural Areas
- Roads
- Non System_Route
- Trail_Route
- springs
- Streams
- Townships
- Sections
- Private
- State
- NFS
- BLM
- NPS
- Unit/division boundary

N W E S

0 0.25 0.5 1 1.5 2 Miles


Soda Creek/North Butte Allotment
Map 2 - Range Improvements and Areas Closed or Limited to Grazing
Little Grizzly Wtl Habitat (Deferred)
Little Grizzly
Cold Spr. Exclosure (Closed)
FESC3
FESC2
FESC1
LT Exclosure (Limited/Deferred)
Butte Cr. House
Cirby
Butte Cr. House Pasture (Closed)
Soda Ridge rRNA
rRtAs and Soda Cr. Canyon (Closed)
Green Island Lake rRNA
FEMH2
FEMH1
Legend
Allotment Boundary
fences
water troughs
springs
MontaneMeadow\Veg
Fens
streams
Research Natural Areas
Special Interest Areas
closed
Non System_Route
Road_Route
Trail_Route
Sections
Townships
PRIVATE
STATE
NFS
BLM
NPS
N
W
E
S
0 0.35 0.7 1.4 2.1 2.8
Miles

b.a.m. 8/12/2009


Soda Creek/North Butte Allotment
Map 3 - Key Areas
A
B
C
D
E
F
G
H
I
J
K
L
Soda Ridge rRNA
Green Island Lake rRNA
Key Areas
A = Little Grizzly
B = Milkhouse
C = Ben John
D = Yellow Creek
E = LT Creek
F = Willow Creek
G = Big Meadow
H = Sawmill
I = Scotts John
J = Soda Cr/Trib.
Other
K = Butte Cr. House (closed)
L = Butte Creek
N
W
E
S
0 0.3 0.6 1.2 1.8 2.4
Miles
Legend
Allotment Boundary
Key Areas
Corrals
cattleguard
fences
water troughs
springs
MontaneMeadow\Veg
Fens
streams
Aspen
Research Natural Areas
Special Interest Areas
closed
Non System_Route
Road_Route
Trail_Route
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